IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the

application:

1   1.   (Currently Amended) A method for providing printer recognition and

2   management of a print job entity, comprising:

3   establishing a repository of attributes and status information associated with each

4   print job that passes through a printer system; and

5   providing an interface to a plurality of components to allow access to the attributes

6   and status information in the repository by the plurality of components; and

7   ____ establishing a job monitor for managing the repository of attributes and status

8   information associated with each print job, for responding to a call by a printer component

9   and for managing interactions between printer components in order to control the processing

10 of the job.

1   2.   (Original)   The method of claim 1 wherein the interface comprises at least

2   one of a Web Page channel, a multiplexer to manage the routing of jobs to the print engine

3   and a spooler, a job control function interface, a pipeline interface, an operations panel

4   interface and a pull print interface.

1   3.   (Original)   The method of claim 1 further comprising providing by the

2   interface an ability for components to process a job according to requirements of the

3   component and reporting job attributes and processing status of the job for common access

4   by other components.

1   4.   (Original)   The method of claim 1 further comprising providing by the

2   interface access to maintained job variable to the components.

1   5.   (Original)   The method of claim 1 further comprising providing by the

2   interface to a component access to common variables, the components presenting job

3   attributes or status to the interface.

1   6.   (Original)   The method of claim 5 wherein the attributes are presented

2   according to requirements dictated by the interface

1   7.   (Original)   The method of claim 1 wherein the interface provides the

2   ability for components to create job entries, obtain and set job attributes, manipulate the state

3   and status of jobs in the system, and obtain job ordering information pertinent to the calling

4   component.

1   8.   (Original)   The method of claim 1 wherein the repository provides a global

2   view of jobs within the printer, the global view includes an actively printing job, jobs in the

3   process of being spooled, jobs on the spool queue, and jobs on the pull print queue.

1   9.   (Currently Amended) The method of claim 1 wherein the interface

2   accommodates either implementation of port connection managers and pass job information

3   from a port connection manager to the repository.

1   10.   (Original)   The method of claim 1 wherein the interface cancels jobs.

1   11.   (Original)   The method of claim 10 wherein a cancelled job comprises a

2   current job.

1   12.   (Original)   The method of claim 10 wherein a cancelled job comprises a

2   job having a selected attribute.

1   13.   (Original)   The method of claim 1 further comprising providing logical

2   views to obtain a next job to be processed by a component and to obtain a list of all jobs in

3   the order that they are processed.

1   14.   (Currently Amended) The method of claim 1 further comprises ~~establishing a~~

2   ~~job monitor for~~ obtaining a Job ID, performing a query for attributes of a job, updating job

3   attributes, canceling jobs, providing logical views of a job, handling printer events, getting

4   attributes of the printer and setting printer attributes <u>by the job monitor</u>.

1   15.   (Original)   The method of claim 14 wherein the attributes are updated

2   through the job monitor.

1   16.   (Original)   The method of claim 14 wherein the job monitor provides the

2   ability for any component to set job attributes.

1   17.   (Original)   The method of claim 14 wherein the job monitor uses job states

2   to control the flow of jobs.

1   18.   (Currently Amended) The method of claim 14 further comprising ~~responding~~

2 ~~by the job monitor to a component call, wherein the job monitor determines~~ determining a

3 next job to process and ~~wherein the component determines~~ determining valid states for a call

4 by the component.

1   19.   (Original)   The method of claim 18 further comprising maintaining a valid

2 state for a multiplexer.

1   20.   (Original)   The method of claim 19 wherein the maintaining a valid state

2 for a multiplexer further comprises:

3   placing an incoming job into an unknown state when a job identification is requested;

4   placing the incoming job in the Pull Print queue when the job is stop-flowed at a port

5 connection manager waiting for access to the printer because a print engine is processing

6 another job; and

7   selecting the incoming job and processing the job according to whether the job must

8 be spooled, may spool or must print.

1   21.   (Original)   The method of claim 20 wherein the incoming job is routed to

2 the print engine or the spooler according to which comes first when the job is a job that may

3 spool.

1   22.   (Original)   The method of claim 20 wherein the incoming job is placed in

2 a pending spooler when the job is a job that must be spooled.

1   23.   (Original)   The method of claim 20 further comprising indicating a done

2   state for the multiplexer when the job has been printed.

1   24.   (Original)   The method of claim 18 further comprising maintaining a valid

2   state for a spooler.

1   25.   (Original)   The method of claim 24 wherein the maintaining a valid state

2   for a spooler further comprises:

3   receiving a job identification request;

4   entering a not spooled state when the spooler has not yet processed the job;

5   entering a spooling, can despool state when the job is being written to the spool

6   device thereby allowing the job to be selected for despooling at any time;

7   entering a spooling, despooling state when the job is being written to the spool device

8   and is also being read from the spool device;

9   entering a waiting to despool state when the end of the job has been received;

10   entering a despooling state when the job is being read from the spool device and

11   written to the multiplexer; and

12   entering the done state when the job is finished being processed by the spooler.

1   26.   (Original)   The method of claim 25 wherein a job that is printed directly

2   and not processed by the spooler remains in the not spooled state.

1   27.   (Original)   The method of claim 18 further comprising maintaining a valid

2   state for an interpreter.

1   28.   (Original)   The method of claim 27 wherein the maintaining a valid state

2   for a interpreter further comprises:

3   entering a waiting for data stated when job processing by the interpreter has started;

4   entering an interpreting state when the job is being processed by the interpreter; and

5   entering a done state when the job is finished being processed by the interpreter.

1   29.   (Original)   The method of claim 18 further comprising maintaining a valid

2   state for a print engine.

1   30.   (Original)   The method of claim 29 wherein the maintaining a valid state

2   for a print engine further comprises:

3   entering a waiting for pages state when job processing by an interpreter has not yet

4   started;

5   entering a waiting for pages state when the job has started;

6   entering the pages queued state when one or more pages for the job have been created

7   by the interpreter and written to the page buffer;

8   entering the pages printing state when one or more pages for the job have been

9   delivered to the output tray; and

10   entering the done state when the last page for the job has been delivered to the output

11   tray.

1   31.   (Original)   The method of claim 1 further comprising handling incoming

2   jobs with a port connection manager, wherein the port connection manager calls to a

3   multiplexer to process the job.

1   32.   (Original)   The method of claim 1 further comprising deciding whether to

2   assign a job to the printer, whether to assign a job to a spooler, whether the job must wait for

3   available resources or whether the job cannot be processed.

1   33.   (Original)   The method of claim 1 further comprising requesting from a

2   job monitor a job identification prior to processing the job by a multiplexer.

1   34.   (Original)   The method of claim 33 further comprising storing the job

2   identification in a job table and clearing the job identification from the table when an end of

3   job is called by a port connection manager.

1   35.   (Original)   The method of claim 1 further comprising providing a job

2   monitor to fetch jobs in an order that is dependent upon the calling component.

1   36.   (Original)   The method of claim 35 further comprising examining by the

2   job monitor process job states and variables to determine the correct response and to return

3   an appropriate job identification for a job.

1   37.   (Original)   The method of claim 1 further comprising providing an event

2   registration to provide a methodology for a controller to indicate events to a job monitor,

3   wherein the Job Monitor serves as the system focal point for tracking job related events as

4   they occur during the course of an entire print process.

1   38.   (Original)   The method of claim 37 further comprising defining events for

2   the job monitor.

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1   39.   (Original)   The method of claim 1 further comprising providing a job

2   monitor for addressing job processing complexity by viewing a job on a higher conceptual

3   plane rather than managing a collection of attributes and status variables that is unique for

4   each data channel.

1   40.   (Original)   The method of claim 1 further comprising providing a job

2   monitor for providing a common method of accessing the variables associated with a job for

3   the components.

1   41.   (Currently Amended) An apparatus for providing printer recognition and

2   management of a print job entity, comprising:

3   a repository of attributes and status information associated with each print job that

4   passes through a printer system; and

5   an interface to a plurality of components, the interface providing access to the

6   attributes and status information in the repository by the plurality of components; and

7   a job monitor for managing the repository of attributes and status information associated with

8   each print job, for responding to a call by a printer component and for managing interactions

9   between printer components in order to control the processing of the job. .

1   42.   (Original)   The apparatus of claim 41 wherein the interface comprises at

2   least one of a Web Page channel, a multiplexer to manage the routing of jobs to the print

3   engine and a spooler, a job control function interface, a pipeline interface, an operations

4   panel interface and a pull print interface.

1   43.   (Original)   The apparatus of claim 41 wherein the interface provides an

2   ability for components to process a job according to requirements of the component and

3   reports job attributes and processing status of the job for common access by other

4   components.

1   44.   (Original)   The apparatus of claim 41 wherein the interface provides

2   access to maintained job variable to the components.

1   45.   (Original)   The apparatus of claim 41 wherein the interface provides a

2   component access to common variables, the components presenting job attributes or status to

3   the interface.

1   46.   (Original)   The apparatus of claim 45 wherein the attributes are presented

2   according to requirements dictated by the interface

1   47.   (Original)   The apparatus of claim 41 wherein the interface provides the

2   ability for components to create job entries, obtain and set job attributes, manipulate the state

3   and status of jobs in the system, and obtain job ordering information pertinent to the calling

4   component.

1   48.   (Original)   The apparatus of claim 41 wherein the repository provides a

2   global view of jobs within the printer, the global view includes an actively printing job, jobs

3   in the process of being spooled, jobs on the spool queue, and jobs on the pull print queue.

1   49.   (Currently Amended) The apparatus of claim 41 wherein the interface

2   accommodates ~~either~~ implementation of port connection managers and pass job information

3   from a port connection manager to the repository.

1   50.   (Original)   The apparatus of claim 41 wherein the interface cancels jobs.

1   51.   (Original)   The apparatus of claim 50 wherein a cancelled job comprises a

2   current job.

1   52.   (Original)   The apparatus of claim 50 wherein a cancelled job comprises a

2   job having a selected attribute.

1   53.   (Original)   The apparatus of claim 41 wherein the a repository and

2   interface are provided by a job monitor, the job monitor further providing logical views to

3   obtain a next job to be processed by a component and to obtain a list of all jobs in the order

4   that they are processed.

1   54.   (Original)   The apparatus of claim 41 wherein the job monitor obtains a

2   Job identification, performs a query for attributes of a job, updates job attributes, cancels

3   jobs, provides logical views of a job, handles printer events, gets attributes of the printer and

4   sets printer attributes.

1   55.   (Original)   The apparatus of claim 54 wherein the attributes are updated

2   through the job monitor.

1   56.   (Original)   The apparatus of claim 54 wherein the job monitor provides the

2   ability for any component to set job attributes.

1   57.   (Original)   The apparatus of claim 54 wherein the job monitor uses job

2   states to control the flow of jobs.

1   58.   (Currently Amended) The apparatus of claim 54 wherein the job monitor

2   ~~responds to a component call,~~ determines a next job to process, the component determining

3   valid states for a call.

1   59.   (Original)   The apparatus of claim 58 further comprising a multiplexer.

1   60.   (Original)   The apparatus of claim 59 wherein the valid states for a

2   multiplexer further comprise:

3   an unknown stated for when a job identification is requested; and

4   a pull print queue state for the job when the job is stop-flowed at a port connection

5   manager waiting for access to the printer because a print engine is processing another job;

6   wherein the multiplexer receives the job and selects to place the job in a job must be

7   spooled state, a may spool state or must print state.

1   61.   (Original)   The apparatus of claim 60 wherein the multiplexer routes the

2   incoming job to the print engine or the spooler according to which becomes available first

3   when the job is a job that may spool.

1   62.   (Original)   The apparatus of claim 60 wherein the multiplexer places an

2   incoming job in a pending spooler when the job is a job that must be spooled.

1   63.   (Original)   The apparatus of claim 60 wherein the multiplexer enters a

2   done state for the multiplexer when the job has been printed.

1   64.   (Original)   The apparatus of claim 58 further comprising a spooler.

1   65.   (Original)   The apparatus of claim 64 wherein the spooler receiving a job

2   identification request, enters a not spooled state when the spooler has not yet processed the

3   job, enters a spooling, can despool state when the job is being written to the spool device

4   thereby allowing the job to be selected for despooling at any time, enters a spooling,

5   despooling state when the job is being written to the spool device and is also being read from

6   the spool device, enters a waiting to despool state when the end of the job has been received,

7   enters a despooling state when the job is being read from the spool device and written to the

8   multiplexer and enters the done state when the job is finished being processed by the spooler.

1   66.   (Original)   The apparatus of claim 65 wherein a job that is printed directly

2   and not processed by the spooler remains in the not spooled state.

1   67.   (Original)   The apparatus of claim 58 further comprising an interpreter.

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1   68.   (Original)   The apparatus of claim 67 wherein the interpreter enters a

2   waiting for data stated when job processing by the interpreter has started, enters an

3   interpreting state when the job is being processed by the interpreter and enters a done state

4   when the job is finished being processed by the interpreter.

1   69.   (Original)   The apparatus of claim 58 further comprising a print engine.

1   70.   (Original)   The apparatus of claim 69 wherein the print engine enters a

2   waiting for pages state when job processing by an interpreter has not yet started, enters a

3   waiting for pages state when the job has started, enters the pages queued state when one or

4   more pages for the job have been created by the interpreter and written to the page buffer,

5   enters the pages printing state when one or more pages for the job have been delivered to the

6   output tray and enters the done state when the last page for the job has been delivered to the

7   output tray.

1   71.   (Original)   The apparatus of claim 41 wherein the a repository and

2   interface are provided by a job monitor, the job monitor further handling incoming jobs with

3   a port connection manager, wherein the port connection manager calls to a multiplexer to

4   process the job.

1   72.   (Original)   The apparatus of claim 41 wherein the a repository and

2   interface are provided by a job monitor, the job monitor further deciding whether to assign a

3   job to the printer, whether to assign a job to a spooler, whether the job must wait for available

4   resources or whether the job cannot be processed.

1   73.   (Original)   The apparatus of claim 41 wherein the a repository and

2   interface are provided by a job monitor, the job monitor receiving a request for a job

3   identification prior to processing the job by a multiplexer.

1   74.   (Original)   The apparatus of claim 73 wherein the job identification is

2   stored in a job table, the job monitor clearing the job identification from the table when an

3   end of job is called by a port connection manager.

1   75.   (Original)   The apparatus of claim 41 further comprising a job monitor to

2   fetch jobs in an order that is dependent upon the calling component.

1   76.   (Original)   The apparatus of claim 75 further comprising a job monitor for

2   examining process job states and variables to determine the correct response and to return an

3   appropriate job identification for a job.

1   77.   (Original)   The apparatus of claim 41 further comprising a job monitor for

2   serving as a focal point for tracking job related events as they occur during the course of an

3   entire print process.

1   78.   (Original)   The apparatus of claim 77 further comprising events definitions

2   for the job monitor.

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1   79.   (Original)   The apparatus of claim 41 further comprising a job monitor for

2   addressing job processing complexity by viewing a job on a higher conceptual plane rather

3   than managing a collection of attributes and status variables that is unique for each data

4   channel.

1   80.   (Original)   The apparatus of claim 41 further comprising a job monitor for

2   providing a common method of accessing the variables associated with a job for the

3   components.

1   81.   (Currently Amended) An article of manufacture comprising a program

2   storage medium readable by a computer, the medium tangibly embodying one or more

3   programs of instructions executable by the computer to perform a method for providing

4   printer recognition and management of a print job entity, the method comprising:

5   establishing a repository of attributes and status information associated with each

6   print job that passes through a printer system; and

7   providing an interface to a plurality of components to allow access to the attributes

8   and status information in the repository by the plurality of components; and

9   establishing a job monitor for managing the repository of attributes and status

10   information associated with each print job, for responding to a call by a printer component

11   and for managing interactions between printer components in order to control the processing

12   of the job.